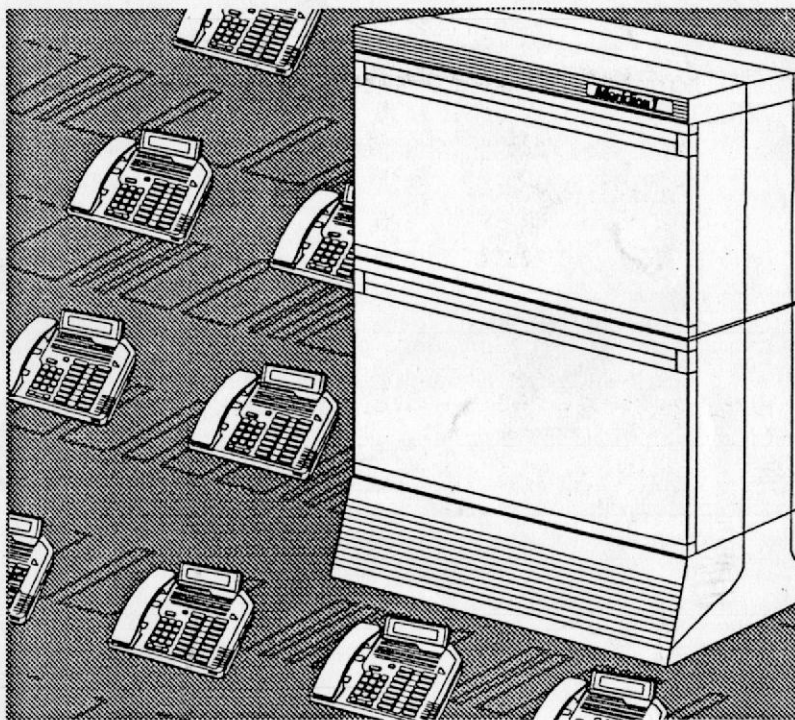


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SL-1

Call Detail Recording

Description and formats
Standard, X11 release 16



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Communication Systems

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Call record generation

Each call generates a single call record. Calls that are modified because of certain features (like call transfer or conference calls) generate multiple records. This section outlines the different call records and their applications.

For every call to be recorded software generates one Normal record or several Start and End records. Additional record types are generated to accommodate certain features. If Internal Call Detail Recording (ICDR) is used, Internal records are generated instead of Normal, Start and End records.

Normal record (N)

A Normal (N) record is generated when a call is established, whether or not it is extended through the Attendant Console, and when no other set feature is activated. The Normal call record contains the following information:

RECTYPE	call Record Type
RECNO	call Record Number
CUSTNO	Customer Number for the customer being recorded in this report
ORIGID	Originating identification
TERID	Terminating Identification
AUXID (optional)	Auxiliary Identification
TIMESTAMP	Time of day call was originated/recorded
DURATION	Length of call, not included on TTY outputs
DIGITS	Outpulsed digits after conversion/translation—may not be the digits dialed
PRECLEVEL	Optional—Precedence level
ORIGTENANT	Optional—Originating tenant number, Multi-Tenant only
TERTENANT	Optional—Terminating tenant number, Multi-Tenant only
CLID	Optional—ISDN must be equipped

For a Normal (N) record, all telephone set dial pad input is included in the call record. It is therefore possible the record will include symbols and unused digits. For instance, Speed Call and Autodial calls using the asterisk (*) will show the symbol in the CDR record of the Speed Call or Autodial call. End-to-End Signalling (EES) digits are also shown in the record.

A user may enter useless digits before the system receives an EOD timeout, or an octothorpe (#) entry. Then, the call is completed to the correct destination and the CDR record contains the useless digits.

When a Route Selection feature is used, the letter A precedes the DIGITS field on TTY outputs. These features are Basic Alternate Route Selection (BARS), Network Alternate Route Selection (NARS), Route Selection-Automatic Number Identification (RS-ANI) and Coordinated Dialing Plan (CDP). In BARS/NARS features, the letter E precedes the TTY DIGITS field if the call was completed over facilities that are designated through service change as expensive routes.

Incoming calls

An incoming call answered by the attendant and extended to a station generates a Normal record.

A call answered and extended by the Attendant generates a Normal record showing the incoming trunk as the ORIGID and the terminating station as the TERID. No indication is given that the attendant is involved in the call.

If the calling party abandons the call before the station answers, and before recall is activated, no record is generated. However, if the call is abandoned during recall, the Attendant Console is shown as the TERID. Incoming calls answered by the attendant but not extended to a station are shown with the Attendant Console as the TERID.

Outgoing calls

An outgoing call placed by the attendant generates a Normal record, indicating the Attendant Console as the ORIGID and the outgoing trunk as the TERID. However, when the call is extended to a station, the Normal record generated indicates the outgoing trunk as ORIGID and the station as the TERID. The DIGITS field includes the station number dialed by the attendant.

Ring Again

When the Ring Again feature is activated, a record is generated only after a trunk is seized.

Tie trunk operation

The duration of calls placed over tandem Tie trunks is calculated from the time the call is answered (for example, answer supervision is received), rather than from the time the trunk is seized. A Normal or Start record is generated only if Answer supervision is received.

Start record (S)

A Start (S) record is generated when a call receives treatment from certain features of the system. A Start record contains the following information:

RECTYPE

RECNO

CUSTNO

ORIGID

TERID

AUXID (optional)

TIMESTAMP

DURATION

DIGITS

PRECLEVEL (optional)

ORIGTENANT(optional)

TERTENANT(optional)

CLID (optional)

Refer to the section about N records for descriptions of these field outputs.

Call Transfer

When the Call Transfer feature is activated on an established call, a Start (S) record is generated instead of a Normal record. The Start (S) record is generated when the transfer is completed and shows the two involved parties immediately before the feature was activated. On call termination, an End record is generated showing its final disposition. Start records are not generated for intermediate stations when a call is transferred more than once.

Conference

When the Conference feature is activated on an established call, a Start record is generated as described for the Call Transfer feature. A subsequent Start record is generated for each CDR trunk included in the conference. The Duration field, which appears on CDR tape but not in TTY output, is calculated from the previous Start record timestamp to the current Start record timestamp. Although the sequence of related Start records generated may be altered by the CDR processing routines, the chronological (timestamp) data remains intact and each Start record is generated before its corresponding End record. The End record shows the conference bridge as the ORIGID and the conferenced trunk as TERID.

Call Forward

When the Call Forward feature is activated and results in a trunk-to-trunk (tandem) call, a consecutive pair of Start records are generated. The first record indicates the incoming trunk as ORIGID and the call forwarded DN as TERID. The second record indicates the call forwarded DN as the ORIGID and the outgoing trunk as the TERID. Both records indicate the same timestamp and duration data. An End record is generated at the end of the call.

Note: When Call Forward is activated for an incoming Tie to outgoing Tie call, two Normal records are generated—one for incoming Tie trunk to set, and the other for the set to the outgoing Tie trunk.

Other features

On established calls, an S record is generated for the following features:

- Barge-In/Busy Verify
- Privacy release
- Override

Calls that would usually generate a Normal record are altered to generate a Start record. The record indicates that a feature was activated during the call, as well as any changes to the parties involved. The trunk ID remains consistent throughout. An End record is generated on call termination.

End record (E)

End (E) records are associated with a specific Start record and are generated on termination of the call. The record shows the final disposition of each call. The timestamps on the corresponding Start and End records can be used to calculate the Duration of a call. The End record contains the following information:

RECTYPE

RECNO

CUSTNO

ORIGID

TERID

AUXID (optional)

TIMESTAMP

DIGITS

PRECLEVEL(optional)

ORIGTENANT(optional)

TERTENANT(optional)

CLID (optional)

Refer to the section about N records for descriptions of these fields.

Initialization record (I)

After a system initialization, a single (I) record is generated to note this occurrence and its time in the following format:

RECTYPE

TIMESTAMP

Refer to the section about N records for descriptions of these fields.

Timestamp record (T)

When the system time or date is changed from either the Attendant Console or a TTY, a consecutive pair of T records are generated specifying the old and new timestamps. The first record in the pair gives the old timestamp, and the second record shows the updated timestamp. Both records have the following format:

RECTYPE

TIMESTAMP

Refer to the section about N records for descriptions of these fields.

Authorization Code record (A)

The Authorization Code (A) recording is optional and is set using software LD24. An A record is generated when the code is entered and one of the following occurs:

- a trunk is seized
- a local set answers Direct Inward System Access (DISA) calls
- Ring Again is activated, in which case both the ORIGID and TERID fields are the DN associated with the station entering the authorization code

When authorization codes are stored as Auto Dial or Speed Call entries, the number stored must contain the access code followed by the Authorization Code only. All digits after the access code are interpreted as Authorization Code digits. This record contains the following information:

RECTYPE

RECNO

CUSTNO

ORIGID

TERID

AUXID (optional)

TIMESTAMP

DIGITS

PRECLEVEL (optional)

ORIGTENANT (optional)

TERTENANT (optional)

CLID (optional)

Refer to the section about N records for descriptions of these fields.

Charge Account record (C)

The Charge Account (C) record is designed to allow billing for calls to specific charge account numbers. Charge account number lengths (2 to 23 digits) are defined individually for each customer, using LD15. A charge account number, when entered either before dialing or during an established incoming or outgoing call, causes a Charge Account record to be generated with the following information:

RECTYPE

RECNO

CUSTNO

ORIGID

TERID

AUXID (optional)

TIMESTAMP

DIGITS

PRECLEVEL (optional)

ORIGTENANT (optional)

TERTENANT (optional)

CLID (optional)

Refer to the section about N records for descriptions of these field outputs.

Charge Numbers of Fixed Length

The system assumes that a charge account number is valid when the number of digits entered corresponds to the account number length as defined in the Customer Data Block (LD15).

- When a charge account number is entered before establishing a call and too few digits are entered, the system waits 30 seconds (15 seconds for 2500-type telephone sets) for further input. When no further digits are entered, overflow tone is provided for 15 seconds, then the set is locked out by the system. A Charge record is generated showing the partially entered charge account number.

- When a charge account number is entered during an established call and too few digits are entered, no response is given until the interdigit timeout occurs. Overflow tone is provided for 15 seconds. Then, the previously established call will be reconnected. On 500/2500-type telephone sets, if the user does not wait for a response and has dialed too few digits, then each switchhook flash is interpreted as a digit 1 until the charge account length is reached. Dial tone is then returned and the next switchhook flash will reconnect the call.
- On SL-1 sets without a charge key, if the user does not wait for a response and has dialed too few digits, then the call is reestablished when the DN key is pressed. However, no charge record will be produced.

Charge Numbers of variable length

Attendant Consoles and SL-1 sets equipped with a charge (CHG) key are permitted to enter charge account numbers containing less digits than defined in the Customer Data Block (LD15). The charge account number entered is accepted by the system when the CHG key is operated. Charge account number entry is also accepted by operating DN, Call Transfer, or Conference keys before the CHG key is operated. The CHG key may also be used to terminate an entry, to correct an error, or to enter multiple charge account numbers.

Number deletion

A Charge Account record is not output by the system unless the call involves a trunk and meets the criteria set for CDR in the Route Data Block (LD16).

Call Transfer

A call transferred from one set (A) to another set (B) generates a Start record for set A and an End record for set B when the call is terminated. However, if set B, instead of terminating the call, enters a charge account number and then transfers the call to another set (C), a Charge record is generated for set B. The resulting Start and End records do not indicate set B or any other intermediate set as being involved in the call. The Start, Charge and End records are only associated on a timestamp and trunk basis—the trunk is the same on all three records.

Charge Conference record (M)

Charge Conference (M) records allow the assignment of one or more charge account numbers to one, several or all members of a conference call. Individual Start, Charge Conference and End records are generated for each individual trunk participating in the Conference call. Individual End records are generated for each trunk as it disconnects from the conference. The Charge Conference record contains the following:

RECTYPE
RECNO
CUSTNO
ORIGID
TERID
AUXID (optional)
TIMESTAMP
DIGITS
PRECLEVEL (optional)
ORIGTENANT (optional)
TERTENANT (optional)
CLID (optional)

Refer to the section about N records for descriptions of these field outputs.

Different Account Numbers

To assign portions of a Conference call to different charge account numbers, the account numbers must be entered when adding a trunk to a conference and before conferencing is completed. For 500/2500-type sets, the account number is entered after the switchhook flash and before the trunk is dialed. For SL-1 sets, the account number is entered after the Conference key is operated, either before or after the trunk is dialed and before the Conference key is operated a second time. The M record generated shows the set performing the entry, the trunk added, and the charge account number. A charge account number is entered for each trunk added to the conference.

Single Account Numbers

When all participants in a Conference call are assigned the same charge account number, only one entry is required. Once all the trunks are included in the conference, the charge account number is entered in the usual manner. Separate Charge Conference records are generated for each trunk in the conference call.

Calling Party Number record (P)

The Calling Party Number (CPN) record is useful in matching telephone company billing records of collect calls against call detail records. Using a CPN key assigned to Attendant Consoles and SL-1 sets, and entering the Calling Party Number (CPN) of 1 to 23 digits, generates a P record. A CPN (P) record is generated each time the CPN key is used, allowing multiple CPN (P) records. The P record contains the following information:

RECTYPE

RECNO

CUSTNO

ORIGID

TERID

AUXID (optional)

TIMESTAMP

DIGITS

PRECLEVEL (optional)

ORIGTENANT (optional)

TERTENANT (optional)

CLID (optional)

Refer to the section about N records for descriptions of these field outputs.

Connection record (ACD calls)

Connection records are used with Automatic Call Distribution (ACD) applications connecting to auxiliary facilities—customer defined host computer processors.

There are three types of Connection records:

— R record

- generated for ACD calls that are transferred

— F record

- generated for ACD Conference calls

— Q record

- generated when a connection is made between a trunk and an ACD agent

The appropriate Connection record is generated for each connection made with an ACD agent linked to a customer provided host computer processor. The Connection record allows agents to establish and modify the profile of a call in progress (such as the caller's name, address or other information) which is passed on with the call each time the call is transferred or conferenced. This profile is entered in the host processor and can be displayed on ACD agent terminals.

R records and F records

If the call is transferred or conferenced to another agent, the call profile is output on the second agent's terminal. The second agent can then change the call profile as required. Further transferring or conferencing is treated in the same manner. When the host processor finds a Connection record, it scans the CDR records for other Connection records related to that call. Any call profiles entered earlier are displayed on the ACD agent's screen. This is repeated on all subsequent transfers and conferences until the call is terminated by an agent or transferred to a non-agent.

Q records

The Q record may be used in Voice Response Unit (VRU) applications to inform the customer-provided computer as to which trunk to connect the VRU to play out an electronically constructed message to the caller. This reduces an agent's work time for the call.

Connection records contain the following information:

RECTYPE

RECNO

CUSTNO

ORIGID

TERID

AUXID (optional)

TIMESTAMP

DURATION

DIGITS

PRECLEVEL (optional)

ORIGTENANT (optional)

TERTENANT (optional)

CLID (optional)

Refer to the section about N records for descriptions of these field outputs. The CDR format of Connection records is similar to the N record except that the TERID field contains the TN (packed format) of the agent station.

The Duration field of Connection records contains the length of time a call had to wait before being served. Optionally, the host processor can read this information and provide RUSH displays on agent screens to signal that calls are waiting too long.

Note: Connection records are not recorded on magnetic tape devices.

Priority Connection record

Connection records are intended to integrate the ACD feature operation with host processor facilities to transfer call profiles from agent to agent. In the integrated environment, call completion consists of three parts:

- Switching through a voice path
- Informing the computer of the connection (Connection record)
- Having the host processor display the call profile on the terminal of the agent receiving the call

The time required to process all three parts of the call is cumulative. To reduce the real-time required to complete the call, Connection records are given priority over other types of CDR records. Priorities are assigned in this order:

- High priority timing queue
- Network input messages
- Regular timing queue
- Call ringing
- TTY input
- CDR Connection Call Processing records
- Other functions at lower priority levels (including other CDR records).

CDR record sequencing

The simplest type of call to an ACD DN is an incoming call from a trunk to an agent. The typical sequence of CDR record for this type of call is this:

- Q record — indicates a connection has been established
- N record — indicates that the call is terminated

Calls involving transfer and conference generate a sequence of Connection, Start and End records. This is a typical sequence of those records:

- **Q record** Indicates that a connection has been established.
- **S record** Indicates that the first leg of the call has been completed. Timing and other data are provided for this portion of the call. This record is only generated for the first leg of a call.
- **R record** Indicates that the call has been transferred to a second agent. This record may appear before the S record when the first agent disconnects after the second agent answers. Another R record is generated each time the call is transferred to subsequent agents. There can be any number of additional R records.
- **E record** Indicates that the call is ended. It provides timing and other data for that call.

A typical sequence of records for conference calls is

- **Q record** Indicates that a connection has been established.
- **F record** Indicates that a new connection has been established between two parties for a conference.
- **S record** Indicates that the conference has been set up (third party conferenced to the call). It provides timing and other information for the connection. Only one S record is generated.
- **F record** Generated each time a conference connection is made.
- **E record** Indicates that the call is ended. It provides timing and data for that call.

Because Connection records are processed at a higher priority than other CDR records, the actual sequence of CDR records may vary. Connection records are always output before other types of records. Under heavy traffic conditions, Connection records may be output five or more seconds before other types of records. The actual sequence of the CDR records can be determined by their serial numbers.

Internal record (L)

With X11 release 10 and later software, an L record is produced when the Internal CDR criteria listed below are satisfied. At least one L record is produced when internal calls are modified, forwarded, or transferred.

Requirements

The CDR package is prerequisite for ICDR. To receive a printout in ICDR, the customer must have either the CDR-TTY (CTY) package or a CDR Link (CLNK) package enabled.

Data input for ICDR is not supported by Attendant Administration.

The Communications Administration and Management Channel (CMAC) for Electronic Switching Network (ESN) applications is not supported by ICDR.

Criteria for Internal CDR

An internal call record is output under the following conditions:

- The Call Detail Recording (CDR) feature is enabled.
- All connected parties are stations, attendants, or in conference
- At least one of the parties involved has an ICDR Allowed

If these criteria are satisfied, then the following applies:

- An Internal record is produced at the release of an internal call.
- One or more Internal records are produced at the completion of call modification of an internal call.
- Internal records are produced at the release of a multi-party call..

Internal records contain the following information:

RECTYPE

RECNO

CUSTNO

ORIGID

TERID

AUXID (optional)

TIMESTAMP

DIGITS

PRECLEVEL (optional)

ORIGTENANT (optional)

TERTENANT (optional)

CLID (optional)

Refer to the section about N records for descriptions of these fields.

Automatic Call Distribution (ACD)

Internal records are produced for ACD as follows:

- At the completion of an internal or inter-position call.
- When the Observe Agent function joins the supervisor, ACD agent and the internal party in a conference loop, an Internal record is produced for the agent and internal party. When the Observe Agent function is released, Internal records are produced for the supervisor, agent and internal party.
- Internal records are produced when the supervisor activates or releases the Answer Emergency feature.

In all cases, the ACD Position ID is shown in the OrigID or TerID fields.

Busy Verify

When the attendant conducts busy verify on a station, the established parties are connected in a conference and an Internal record is produced. Internal records are produced when Busy Verify is released, as described for Conference calls.

Call Park

An Internal (L) record is output when an ICDR call is parked.

Conference

Internal records are produced for Conference calls as follows:

- An L record is produced when a party joins or leaves a Conference call.
- Internal records indicate the conference loop as the ORIGID.
- The last two parties remaining on a Conference call are recorded as a normal call.

Group Call

The L record produced when a party is disconnected from a group call identifies the party and the conference loop.

Japan features

The existing CDR and Answer Supervision features provide a half second accuracy option. Internal L records have a two second accuracy in the Duration field, even if the half second option is enabled.

For complete details on CDR in Japan, refer to *Japanese features and services* (553-2001-100).

Override

When set A overrides set B which is connected to set C, a three-party conference is established. When set A releases, Internal records are produced showing the conference loop and each party.

Internal records are also produced when the attendant releases from override on a Do-Not-Disturb station.

Voice messaging

Internal records for calls routed to a voice messaging system contain the agent ID in the terminator field.